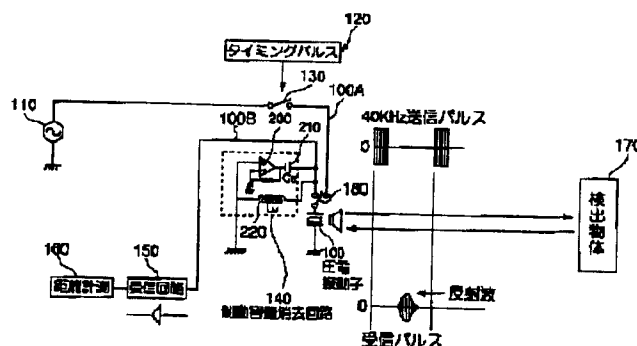


## Patent Abstracts of Japan

APPLICATION DATE : 21-11-97  
APPLICATION NUMBER : 09321548

INVENTOR : TOYODA JUNICHI;

TITLE : ULTRASONIC SENSOR



**SOLUTION:** A switching element 180 which switches the transmission line 100a and reception line 100B to and from a piezoelectric vibrator 100 for both transmission and reception to each other is provided. In addition, an oscillator 110 and a switching element 130 which makes switching operations in accordance with timing pulses are provided on the transmission line A and braking capacity erasing circuits 140 and 190, a reception circuit 150, and a distance measuring section 160 are provided on the reception line 100B. At the time of transmission, the vibrator 100 is driven at the resonant frequency of the vibrator 100. At the time of reception, in addition, the reception is performed at the antiresonant frequency of the vibrator 100 by changing the resonant frequency of the vibrator 100 to the low-frequency side by actuating the braking capacity erasing circuits 140 and 190.

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